REMARKS

The claims in the application remain 1-9, 16, 17, 21, 23, 24, 26, 27 and 28-31.

Favorable reconsideration of the application as amended is respectfully requested.

Claims 28 and 29 have been amended to eliminate the rejection under 35 U.S.C. §112, first paragraph, raised in paragraph 5 of the Final Office Action and find clear support at page 6, lines 15-18 of the specification. Claims 1-3, 8, 16 and 21 have been amended to eliminate the rejections under 35 U.S.C. §112, second paragraph, raised in paragraphs 8-12 of the Final Office Action

Accordingly, the only outstanding issue is the prior art rejection of the claims.

Claims 1-9, 16, 17, 23, 24 and 26-29 have been rejected under 35 U.S.C. §103 as being obvious over WO 03/076114 to Hsu in view of U.S. Pat. No. 6,388,233 to Åberg et al in paragraph 15 of the Final Office Action, while Claims 30 and 31 have been rejected additionally in view of U.S. Pat. No. 4,621,183 to Takeuchi et al in paragraph 16 of the Final Office Action, Claims 1-9, 16, 17, 21, 23, 24, 26 and 27 have been rejected under 35 U.S.C. §103 as being obvious over U.S. Pat. No. 5,773,779 to Morlock in view of Åberg in paragraph 17 of the Final Office Action and Claims 30 and 31 rejected additionally in view of Takeuchi et al in paragraph 18 of the Final Office Action. Furthermore, Claims 3-9, 16, 17, 21 and 26-29 have been rejected under 35 U.S.C. §103 as being obvious over Morlock in view of Åberg and Hsu in paragraph 20 of the Final Office Action, while Claim 31 has been rejected additionally in view of Takeuchi et al in paragraph 21 of the Final Office Action.

However, it is respectfully submitted the invention as recited in all pending claims herein is patentable over this combination of art, for the following reasons (reference will be made to preferred embodiments of the present invention illustrated in the drawings of the present application).

There are distinct differences between the claimed welding technique and method taught in Hsu. Although it is asserted in paragraph 15 on page 5 of the Final Office Action that page 2, lines 19-21 of this reference allegedly discloses the combination of conducting spray arc welding, short pulsing welding and alternating cyclically between the two, in fact Hsu only discloses pulsed GMAW(gas metal arc welding), there being no mention of this constituting short pulsing welding.

Furthermore, in paragraph 15 on pages 5-6 of the Final Office Action, it is asserted setting the number of counts as taught in Hsu is equivalent to setting actual duration time. However, this is clearly not the case. When using a cycle counter, it is not possible to get the accuracy needed in setting of the time for each process. In order to obtain sufficient penetration and, at the same time, prevent the weld pool from running downwardly during welding, setting of parameters to attain just the right amount of heat into the weld pool, is critical. A well-known problem with pulsed welding as described, e.g., at the top of page 3 of the present application, is the requirement for very precise parameter setting, a requirement which cannot be achieved with the cycle counter described in Hsu, because a change of process can only occur at the end of a fulfilled cycle, with the result either too much or insufficient heat is transferred into the weld pool.

It is asserted in paragraph 17 on page 13 of the Final Office Action, that Morlock discloses a method (for welding rails) comprising both spray arc welding and short pulsing welding. However, Morlock, in fact, discloses a method for welding railroad rails using a backing bar, barrier plate P (column 4, lines 15-40, column 5, lines 37-41 and column 9, lines 19-23) to prevent the weld pool from running downwardly during welding and achieve the required convex shape as described, e.g., at page 3, lines 23-28 in the background portion of the present application. In Morlock, each welding run is then made in one welding mode and any switching is made between runs; there is no cyclically alternating between these modes, i.e., no change from one process regulator to the other with short intervals while welding is in progress. As described, e.g., at column 5, lines 9-18 of Morlock, the root pass and next several layers are applied by

spray welding, with the power supply thereafter switched to a pulse weld process.

In paragraph 17 on page 14 of the Final Office Action, it is asserted Fig. 13 of Morlock illustrates a process "alternating cyclically" between short pulsing and spray arc welding. However, Morlock is directed to joining ends of railroad rails in the field (column 1, line 8 and column 2, lines 37-40) which is not, necessarily, an automated process – a welder will manually switch to the prescribed welding mode depending on what portion of the gap (in Fig. 13) is being welded, as each welding run is made in one welding mode and any switching is made between runs; no pre-programming is involved.

Concerning Claims 30 and 31, it is asserted, in paragraph 18 on page 20 of the Final Office Action, it would be obvious to perform welding without weaving as taught, e.g., at column 7, lines 5-7 of Takeuchi et al. However, it is well-known in the art to preferably perform welding without weaving which should only be used when necessary to obtain the desired quality of weld, or indeed a weld at all, e.g., to bridge a gap and prevent a weld pool running downwardly. In Morlock, this problem is addressed by using a backing, barrier plate P.

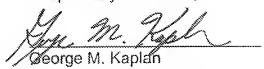
Nevertheless, neither Morlock nor Takeuchi et al teach welding vertical V-joints in aluminum or stainless steel material 5-10 mm. thick without weaving, with the problem of avoiding weaving while welding solved in the explicit manner of the presently claimed invention. In this regard, neither Takeuchi et al nor Åberg et al add anything to Hsu and/or Morlock which would render obvious the invention recited in any pending claim herein.

The remaining art of record has not been applied against the claims and will not be commented upon further at this time.

Accordingly, in view of the forgoing amendment and accompanying remarks, it is respectfully submitted all claims pending herein are in condition for allowance. Please contact the undersigned attorney should there be any questions. The fee for an automatic one-month extension of time for response under 37 C.F.R. §1.136(a) is enclosed.

Early favorable action is earnestly solicited.

Respectfully submitted,



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